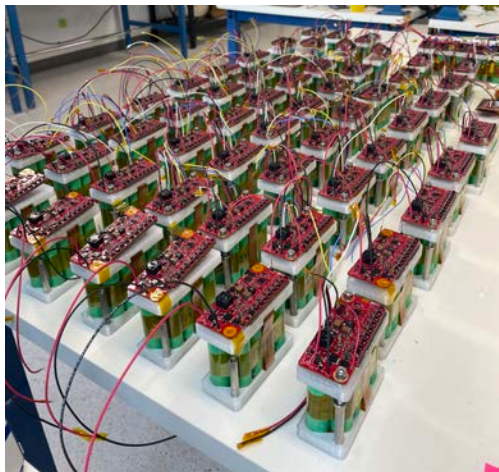


## Flight-proven hardware for missions with demanding power electronics requirements

- Combines performance, reliability, and affordability using state-of-the-art power electronics
- COTS li-ion cells provide high peak power suitable for SAR applications ( $\sim 500$  W/kg)
- Ensures mission success, backed by rigorous qualification procedures
- Features robust fault detection and reset/recovery architecture to ensure satellite survival through unexpected faults and contingencies (validated through extensive testing)
- Multi-year mission lifetime achieved through careful charge and discharge control. Integrated hardware providing control of charging, discharging, cell balancing and power distribution
- 20 systems (3 programs) launched (more delivered, in the system integration pipeline)
- Integrated smallsat power subsystem design and implementation with distributed power generation, storage and control and embedded intelligence
- Streamlined harness results in rapid system integration & test (reduced touch labor and built-in)
- Embedded intelligence within solar panels supports additional functional integration: distributed power management, cell string switching, multi-point peak-power tracking, magnetic actuators and diverse sensors (temperature, sun and magnetic field)
- Integrated panel deployment actuators and sensors



Specification	Value
Modular design	Independent battery cell strings with no single-point failure
Capacity	Adjustable between 70 Wh (single module) and 3 kWh (40 modules)
Bus voltage	28 V nominal (unregulated), regulated output available as option
Peak power	Up to 10 kW (40 modules, 250 W/module)
Operational lifetime	3-5 years or up to 30K cycles (depending on usage)
Mechanical packaging	Optimal balance between mass, stiffness and thermal management
Solar panel interface	Direct solar panel interface with battery charging control
Cell balancing and control	Each cell has dedicated charge, balance and discharge control
Protection and safety	Overcurrent, overcharge, excessive discharge, over-temperature
Control and telemetry	Embedded controller for power control & distribution with RS-422 or CAN interface
Watchdog timer	Hardware-based power-on reset option



Redundant power modules improve system reliability by eliminating single-point failures

**Cubesat solar panels** with optional engineering camera



**Smart solar panels** created with multilayer FR4/PCB substrate, thus enabling rapid manufacturing, and IR thermography validation

